

AMENDMENTS TO THE CLAIMS

A listing of the claims presented in this patent application appears below. This listing replaces all prior versions and listings of claims in this patent application.

Claim 1 to 17 (canceled).

Claim 18 (new): An anisotropic conductive film comprising:
a chain comprising ferromagnetic particles directly linked to each other, the chain formed by magnetism, and
a metal layer covering the chain of ferromagnetic particles,
wherein the ratio of the length of the chain (L) to the diameter of the chain (D) is not less than 3.

Claim 19 (new): The anisotropic conductive film according to claim 18, characterized in that the chain of ferromagnetic particles is oriented in the thickness direction of the film.

Claim 20 (new): The anisotropic conductive film according to claim 18, characterized in that the ferromagnetic particles are selected from the group consisting of a metal having ferromagnetism, an alloy of two or more types of metals having ferromagnetism, an alloy of a metal having ferromagnetism and another metal, and a complex containing a metal having ferromagnetism.

Claim 21 (new): The anisotropic conductive film according to claim 18, wherein the chain is a straight-chain shape or a needle shape.

Claim 22 (new): The anisotropic conductive film according to claim 18, characterized in that the length of the chain of the ferromagnetic particles is less than the distance between

adjacent electrodes, composing a connecting portion, conductively connected by using the anisotropic conductive film.

Claim 23 (new): The anisotropic conductive film according to claim 22, characterized in that the diameter of the chain is not more than 1 μm .

Claim 24 (new): The anisotropic conductive film according to claim 23, wherein the particle diameter of each of the ferromagnetic particles is not more than 400 nm.

Claim 25 (new): The anisotropic conductive film according to claim 22, characterized in that the ferromagnetic particles are selected from the group consisting of a metal having ferromagnetism, an alloy of two or more types of metals having ferromagnetism, an alloy of a metal having ferromagnetism and another metal, and a complex containing a metal having ferromagnetism and at least one metal, and the metal layer covering the chain is selected from a group consisting of Cu, Rb, Rh, Pd, Ag, Re, Pt, and Au.

Claim 26 (new): The anisotropic conductive film according to claim 19, characterized in that the diameter of the chain exceeds 1 μm and is not more than 20 μm .

Claim 27 (new): The anisotropic conductive film according to claim 26, characterized in that the ferromagnetic particles are selected from the group consisting of a metal having ferromagnetism, an alloy of two or more types of metals having ferromagnetism, an alloy of a metal having ferromagnetism and another metal, and a complex containing a metal having ferromagnetism and at least one metal, and the metal layer covering the chain is selected from a group consisting of Cu, Rb, Rh, Pd, Ag, Re, Pt, and Au.

Claim 28 (new): An anisotropic conductive film comprising:

a chain of particles formed by magnetism, each particle comprising ferromagnetic core and a first metal layer covering the ferromagnetic core, and
a second metal covering the chain of particles,
wherein the ratio of the length of the chain (L) to the diameter of the chain (D) is not less than 3.

Claim 29 (new): The anisotropic conductive film according to claim 28, characterized in that the chain of particles is oriented in the thickness direction of the film.

Claim 30 (new): The anisotropic conductive film according to claim 28, characterized in that the chain of particles are selected from the group consisting of a metal having ferromagnetism, an alloy of two or more types of metals having ferromagnetism, an alloy of a metal having ferromagnetism and another metal, and a complex containing a metal having ferromagnetism.

Claim 31 (new): The anisotropic conductive film according to claim 28, wherein the chain is a straight-chain shape or a needle shape.

Claim 32 (new): The anisotropic conductive film according to claim 28, wherein the length of the chain of particles is less than the distance between adjacent electrodes, composing a connecting portion, conductively connected by using the anisotropic conductive film.

Claim 33 (new): The anisotropic conductive film according to claim 32, characterized in that the diameter of the chain is not more than 1 μm .

Claim 34 (new): The anisotropic conductive film according to claim 33, wherein the diameter of each of the particles is not more than 400 nm.

Claim 35 (new): The anisotropic conductive film according to claim 32, characterized in that the particles are selected from the group consisting of a metal having ferromagnetism, an alloy of two or more types of metals having ferromagnetism, an alloy of a metal having ferromagnetism and another metal, and a complex containing a metal having ferromagnetism and at least one metal, and the second metal layer covering the chain is selected from a group consisting of Cu, Rb, Rh, Pd, Ag, Re, Pt, and Au.

Claim 36 (new): The anisotropic conductive film according to claim 29, characterized in that the diameter of the chain exceeds 1 μm and is not more than 20 μm .

Claim 37 (new): The anisotropic conductive film according to claim 36, characterized in that the particles are selected from the group consisting of a metal having ferromagnetism, an alloy of two or more types of metals having ferromagnetism, an alloy of a metal having ferromagnetism and another metal, and a complex containing a metal having ferromagnetism and at least one metal, and the second metal layer covering the chain is selected from a group consisting of Cu, Rb, Rh, Pd, Ag, Re, Pt, and Au.

Claim 38 (new): A method of producing an anisotropic conductive film comprising:
applying a composite material in a binder to a base to form a film, said composite material comprising a chain of ferromagnetic particles directly linked to each other, the chain formed by magnetism, and a metal layer covering the chain of ferromagnetic particles, wherein the ratio of the length of the chain (L) to the diameter of the chain (D) is not less than 3;
applying a magnetic field in a direction crossing a surface of the base to orient the composite material in the thickness direction of the film along the direction of the magnetic field; and
curing the binding agent to fix the orientation of the composite material.

Claim 39 (new): The method according to claim 38, wherein the whole or a part composite material is formed by depositing in a solution containing one type or two or more types of metal ions having ferromagnetism by reducing the ions using a reducing agent in the solution.

Claim 40 (new): The method according to claim 39, wherein the reducing agent is a trivalent titanium compound.

Claim 41 (new): The method according to claim 38, wherein the ratio of the amount of the composite material to the total amount of composite material and binder is 0.05 to 20 % by volume.

Claim 42 (new): The method according to claim 41, wherein the ratio is 0.05 to 5 % by volume.

Claim 43 (new): The method according to claim 38, wherein the composite material and binder are sprayed onto the base.

Claim 44 (new): A method of producing an anisotropic conductive film comprising:
applying a composite material in a binder to a base to form a film, said composite material comprising a chain of particles formed by magnetism, each particle comprising ferromagnetic core and a first metal layer covering the ferromagnetic core, and a second metal covering the chain of particles;

applying a magnetic field in a direction crossing a surface of the base to orient the composite material in the thickness direction of the film along the direction of the magnetic field;
and

curing the binding agent to fix the orientation of the composite material.

Claim 45 (new): The method according to claim 44, wherein the whole or a part of the chain of ferromagnetic particles is formed by depositing in a solution containing one type or two or more types of metal ions having ferromagnetism by reducing the ions to a metal using a reducing agent in the solution.

Claim 46 (new): The method according to claim 45, wherein the reducing agent is a trivalent titanium compound.

Claim 47 (new): The method according to claim 44, wherein the ratio of the amount of the composite material to the total amount of composite material and binder is 0.05 to 20 % by volume.

Claim 48 (new): The method according to claim 47, wherein the ratio is 0.05 to 5 % by volume.

Claim 49 (new): The method according to claim 44, wherein the composite material and binder are sprayed onto the base.